

## CLAIMS

1. A kit for immobilizing an organic substance on a substrate, comprising:

5 a substrate having a surface at least part of which contains aluminum oxide; and

a binding domain for immobilizing the organic substance on the substrate, having an ability to bind to the aluminum oxide and being coupled with the  
10 organic substance, wherein:

the binding domain contains at least a peptide composed of one or more amino acids; and

the organic substance is immobilized on the substrate by means of specific binding of the peptide  
15 to the aluminum oxide when the substrate and the binding domain are brought into contact with each other.

2. A kit according to claim 1, wherein the organic substance includes a biological  
20 substance.

3. A kit according to claim 1, further comprising:

a linker comprised of at least one or more amino acids, which is provided at a coupling portion  
25 between the organic substance and the binding domain.

4. A kit according to any one of claims 1 to 3, wherein the peptide containing the amino acid

- sequence having an ability to bind to the aluminum oxide has any one of at least one amino acid sequence selected from the group consisting of amino acid sequences of SEQ ID NOS: 1 to 32, an altered amino acid sequence obtained such that the amino acid sequence is subject to a deletion, substitution, or addition of one or more amino acids, and a complex amino acid sequence containing two or more of the amino acid sequences, and a repetitive sequence of the amino acid sequences,
- Val-Tyr-Ala-Asn-Gln-Thr-Pro-Pro-Ser-Lys-Ala-Arg (SEQ ID NO: 1)
- Gln-Ser-Ser-Ile-Thr-Thr-Arg-Asn-Pro-Phe-Met-Thr (SEQ ID NO: 2)
- Phe-Met-Asn-His-His-Pro-Asn-Ser-Gln-Gln-Tyr-His (SEQ ID NO: 3)
- Gln-Tyr-Thr-Ser-Ser-Gly-Ile-Ile-Thr-Ser-Ser-Ala (SEQ ID NO: 4)
- His-His-His-Pro-Glu-Asn-Leu-Asp-Ser-Thr-Phe-Gln (SEQ ID NO: 5)
- Gln-Pro-His-Met-His-Arg-Ser-Ser-His-Gln-Asp-Gly (SEQ ID NO: 6)
- Asn-Thr-Thr-Met-Gly-Pro-Met-Ser-Pro-His-Ser-Gln (SEQ ID NO: 7)
- Ala-Ala-His-Phe-Glu-Pro-Gln-Thr-Met-Pro-Met-Ile (SEQ ID NO: 8)
- Asp-His-Gln-Leu-His-Arg-Pro-Pro-His-Met-Met-Arg (SEQ

- ID NO: 9)  
Val-Ser-Arg-His-Gln-Ser-Trp-His-Pro-His-Asp-Leu (SEQ  
ID NO: 10)  
Met-Met-Gln-Arg-Asp-His-His-Gln-His-Asn-Ala-Gln (SEQ  
5 ID NO: 11)  
Val-Thr-Leu-His-Thr-Val-Asp-His-Ala-Pro-Gln-Asp (SEQ  
ID NO: 12)  
Ser-Val-Ser-Val-Gly-Met-Lys-Pro-Ser-Pro-Arg-Pro (SEQ  
ID NO: 13)  
10 His-Leu-Gln-Ser-Met-Lys-Pro-Arg-Thr-His-Val-Leu (SEQ  
ID NO: 14)  
Ile-Pro-Asn-Ala-Glu-Thr-Leu-Arg-Gln-Pro-Ala-Arg (SEQ  
ID NO: 15)  
Val-Gly-Val-Ile-Ser-Ser-Trp-His-Pro-His-Asp-Leu (SEQ  
15 ID NO: 16)  
Thr-Val-Pro-Ile-Tyr-Asn-Thr-Gly-Ile-Leu-Pro-Thr (SEQ  
ID NO: 17)  
Tyr-Thr-Met-His-His-Gly-Ser-Thr-Phe-Met-Arg-Arg (SEQ  
ID NO: 18)  
20 Ser-Met-Met-His-Val-Asn-Ile-Arg-Leu-Gly-Ile-Leu (SEQ  
ID NO: 19)  
Ala-Pro-Met-His-His-Met-Lys-Ser-Leu-Tyr-Arg-Ala (SEQ  
ID NO: 20)  
Met-Met-Gln-Arg-Asp-His-His-Gln-His-Met-Arg-Arg (SEQ  
25 ID NO: 21)  
Met-Lys-Thr-His-His-Gly-Asn-Asn-Ala-Val-Phe-Leu (SEQ  
ID NO: 22)

- Leu-Glu-Pro-Leu-Pro-His-Thr-Pro-Arg-Met-Tyr-Ala (SEQ  
ID NO: 23)
- Gln-Leu-Tyr-Glu-Pro-Asp-Ser-Gly-Pro-Trp-Ala-Pro (SEQ  
ID NO: 24)
- 5 Trp-Met-Thr-Lys-Met-Pro-Thr-Thr-His-Thr-Arg-Tyr (SEQ  
ID NO: 25)
- His-His-Pro-Met-Tyr-Ser-Met-Thr-Arg-Ala-Leu-Pro (SEQ  
ID NO: 26)
- Gly-Ser-Ala-His-Ser-Arg-Asn-Asp-Ala-Ala-Pro-Val (SEQ  
10 ID NO: 27)
- His-Ser-Pro-Leu-Met-Gln-Tyr-His-Met-Ser-Gly-Thr (SEQ  
ID NO: 28)
- Thr-Ala-His-Met-Thr-Met-Pro-Ser-Arg-Phe-Leu-Pro (SEQ  
ID NO: 29)
- 15 Ala-Cys-Pro-Pro-Thr-Gln-Ser-Arg-Tyr-Cys (SEQ ID NO:  
30)
- Ala-Cys-Asn-Gly-Met-Leu-Ala-Phe-Gln-Cys (SEQ ID NO:  
31)
- Ala-Cys-Thr-Pro-Lys-Pro-Gly-Lys-His-Cys (SEQ ID NO:  
20 32)

5. A kit according to claim 4,  
wherein an amino acid sequence portion of any  
one of the amino acid sequences of SEQ ID NOS: 30 to  
32 can form a cyclic structure with an intramolecular  
25 disulfide binding between Cys amino acid residues  
included therein.

6. A structure which is prepared by

immobilizing an organic substance on a surface of a substrate, comprising:

the substrate having the surface at least part of which contains aluminum oxide; and

- 5 a binding domain for immobilizing the organic substance on the substrate, having an ability to bind to the aluminum oxide and being coupled with the organic substance, wherein:

10 the binding domain contains at least a peptide composed of one or more amino acids; and

the organic substance is immobilized on the surface of the substrate through the binding domain by means of specific binding of the peptide to the aluminum oxide.

- 15 7. A structure according to claim 6, wherein the organic substance is a capturing molecule for capturing a target substance.

8. A structure according to claim 6, wherein the organic substance comprises a  
20 converting molecule having a function to convert a target substance.

9. A method of manufacturing a structure having an organic substance immobilized on a substrate, comprising the steps of:

- 25 preparing an organic substance - binding domain fused product composed of the substrate having a surface at least part of which contains aluminum

oxide and a binding domain having an ability to bind to the aluminum oxide and coupled with the organic substance; and

immobilizing the organic substance on the  
5 substrate by bringing the fused product into contact with the surface of the substrate to cause a peptide having an ability to bind to the aluminum oxide to specifically bind to the aluminum oxide.

10 10. A method of manufacturing a structure according to claim 9, wherein:

the organic substance comprises a biological substance containing protein; and

the method further comprises the step of  
obtaining the organic substance - binding domain  
15 fused product by inducing expression of a fused product-type protein formed by coupling a peptide portion included in the binding domain with the protein included in the biological substance.

the fused product-type protein is expressed on  
20 the basis of a coupling gene having a sequence of bases coupled with each other to encode a combination of an amino acid sequence of the protein and an amino acid sequence included in the binding domain which are coupled.

25 11. A peptide, which has any one of at least one amino acid sequence selected from the group consisting of amino acid sequences of SEQ ID NOS: 1

to 32, an altered amino acid sequence obtained such that the amino acid sequence is subject to a deletion, substitution, or addition of one or more amino acids, and a complex amino acid sequence containing two or  
5 more of the amino acid sequences, and a repetitive sequence of the amino acid sequences, the amino acid sequence having an affinity to aluminum oxide.

Val-Tyr-Ala-Asn-Gln-Thr-Pro-Pro-Ser-Lys-Ala-Arg (SEQ  
ID NO: 1)

10 Gln-Ser-Ser-Ile-Thr-Thr-Arg-Asn-Pro-Phe-Met-Thr (SEQ  
ID NO: 2)

Phe-Met-Asn-His-His-Pro-Asn-Ser-Gln-Gln-Tyr-His (SEQ  
ID NO: 3)

Gln-Tyr-Thr-Ser-Ser-Gly-Ile-Ile-Thr-Ser-Ser-Ala (SEQ  
15 ID NO: 4)

His-His-His-Pro-Glu-Asn-Leu-Asp-Ser-Thr-Phe-Gln (SEQ  
ID NO: 5)

Gln-Pro-His-Met-His-Arg-Ser-Ser-His-Gln-Asp-Gly (SEQ  
ID NO: 6)

20 Asn-Thr-Thr-Met-Gly-Pro-Met-Ser-Pro-His-Ser-Gln (SEQ  
ID NO: 7)

Ala-Ala-His-Phe-Glu-Pro-Gln-Thr-Met-Pro-Met-Ile (SEQ  
ID NO: 8)

Asp-His-Gln-Leu-His-Arg-Pro-Pro-His-Met-Met-Arg (SEQ  
25 ID NO: 9)

Val-Ser-Arg-His-Gln-Ser-Trp-His-Pro-His-Asp-Leu (SEQ  
ID NO: 10)

- Met-Met-Gln-Arg-Asp-His-His-Gln-His-Asn-Ala-Gln (SEQ  
ID NO: 11)
- Val-Thr-Leu-His-Thr-Val-Asp-His-Ala-Pro-Gln-Asp (SEQ  
ID NO: 12)
- 5 Ser-Val-Ser-Val-Gly-Met-Lys-Pro-Ser-Pro-Arg-Pro (SEQ  
ID NO: 13)
- His-Leu-Gln-Ser-Met-Lys-Pro-Arg-Thr-His-Val-Leu (SEQ  
ID NO: 14)
- Ile-Pro-Asn-Ala-Glu-Thr-Leu-Arg-Gln-Pro-Ala-Arg (SEQ  
10 ID NO: 15)
- Val-Gly-Val-Ile-Ser-Ser-Trp-His-Pro-His-Asp-Leu (SEQ  
ID NO: 16)
- Thr-Val-Pro-Ile-Tyr-Asn-Thr-Gly-Ile-Leu-Pro-Thr (SEQ  
ID NO: 17)
- 15 Tyr-Thr-Met-His-His-Gly-Ser-Thr-Phe-Met-Arg-Arg (SEQ  
ID NO: 18)
- Ser-Met-Met-His-Val-Asn-Ile-Arg-Leu-Gly-Ile-Leu (SEQ  
ID NO: 19)
- Ala-Pro-Met-His-His-Met-Lys-Ser-Leu-Tyr-Arg-Ala (SEQ  
20 ID NO: 20)
- Met-Met-Gln-Arg-Asp-His-His-Gln-His-Met-Arg-Arg (SEQ  
ID NO: 21)
- Met-Lys-Thr-His-His-Gly-Asn-Asn-Ala-Val-Phe-Leu (SEQ  
ID NO: 22)
- 25 Leu-Glu-Pro-Leu-Pro-His-Thr-Pro-Arg-Met-Tyr-Ala (SEQ  
ID NO: 23)
- Gln-Leu-Tyr-Glu-Pro-Asp-Ser-Gly-Pro-Trp-Ala-Pro (SEQ



- ID NO: 24)  
Trp-Met-Thr-Lys-Met-Pro-Thr-Thr-His-Thr-Arg-Tyr (SEQ  
ID NO: 25)  
His-His-Pro-Met-Tyr-Ser-Met-Thr-Arg-Ala-Leu-Pro (SEQ  
5 ID NO: 26)  
Gly-Ser-Ala-His-Ser-Arg-Asn-Asp-Ala-Ala-Pro-Val (SEQ  
ID NO: 27)  
His-Ser-Pro-Leu-Met-Gln-Tyr-His-Met-Ser-Gly-Thr (SEQ  
ID NO: 28)  
10 Thr-Ala-His-Met-Thr-Met-Pro-Ser-Arg-Phe-Leu-Pro (SEQ  
ID NO: 29)  
Ala-Cys-Pro-Pro-Thr-Gln-Ser-Arg-Tyr-Cys (SEQ ID NO:  
30)  
Ala-Cys-Asn-Gly-Met-Leu-Ala-Phe-Gln-Cys (SEQ ID NO:  
15 31)  
Ala-Cys-Thr-Pro-Lys-Pro-Gly-Lys-His-Cys (SEQ ID NO:  
32)

12. A DNA molecule, which encodes a peptide  
chain,  
20 the peptide chain having any one of at least  
one amino acid sequence selected from the group  
consisting of amino acid sequences of SEQ ID NOS: 1  
to 32, an altered amino acid sequence obtained such  
that the amino acid sequence is subjected to a  
25 deletion, substitution, or addition of one or more  
amino acids, and a complex amino acid sequence  
containing two or more of the amino acid sequences,

and a repetitive sequence of the amino acid sequences,  
the amino acid sequence having an affinity to  
aluminum oxide.

Val-Tyr-Ala-Asn-Gln-Thr-Pro-Pro-Ser-Lys-Ala-Arg (SEQ

5 ID NO: 1)

Gln-Ser-Ser-Ile-Thr-Thr-Arg-Asn-Pro-Phe-Met-Thr (SEQ

ID NO: 2)

Phe-Met-Asn-His-His-Pro-Asn-Ser-Gln-Gln-Tyr-His (SEQ

ID NO: 3)

10 Gln-Tyr-Thr-Ser-Ser-Gly-Ile-Ile-Thr-Ser-Ser-Ala (SEQ

ID NO: 4)

His-His-His-Pro-Glu-Asn-Leu-Asp-Ser-Thr-Phe-Gln (SEQ

ID NO: 5)

Gln-Pro-His-Met-His-Arg-Ser-Ser-His-Gln-Asp-Gly (SEQ

15 ID NO: 6)

Asn-Thr-Thr-Met-Gly-Pro-Met-Ser-Pro-His-Ser-Gln (SEQ

ID NO: 7)

Ala-Ala-His-Phe-Glu-Pro-Gln-Thr-Met-Pro-Met-Ile (SEQ

ID NO: 8)

20 Asp-His-Gln-Leu-His-Arg-Pro-Pro-His-Met-Met-Arg (SEQ

ID NO: 9)

Val-Ser-Arg-His-Gln-Ser-Trp-His-Pro-His-Asp-Leu (SEQ

ID NO: 10)

Met-Met-Gln-Arg-Asp-His-His-Gln-His-Asn-Ala-Gln (SEQ

25 ID NO: 11)

Val-Thr-Leu-His-Thr-Val-Asp-His-Ala-Pro-Gln-Asp (SEQ

ID NO: 12)

- Ser-Val-Ser-Val-Gly-Met-Lys-Pro-Ser-Pro-Arg-Pro (SEQ  
ID NO: 13)
- His-Leu-Gln-Ser-Met-Lys-Pro-Arg-Thr-His-Val-Leu (SEQ  
ID NO: 14)
- 5 Ile-Pro-Asn-Ala-Glu-Thr-Leu-Arg-Gln-Pro-Ala-Arg (SEQ  
ID NO: 15)
- Val-Gly-Val-Ile-Ser-Ser-Trp-His-Pro-His-Asp-Leu (SEQ  
ID NO: 16)
- Thr-Val-Pro-Ile-Tyr-Asn-Thr-Gly-Ile-Leu-Pro-Thr (SEQ  
10 ID NO: 17)
- Tyr-Thr-Met-His-His-Gly-Ser-Thr-Phe-Met-Arg-Arg (SEQ  
ID NO: 18)
- Ser-Met-Met-His-Val-Asn-Ile-Arg-Leu-Gly-Ile-Leu (SEQ  
ID NO: 19)
- 15 Ala-Pro-Met-His-His-Met-Lys-Ser-Leu-Tyr-Arg-Ala (SEQ  
ID NO: 20)
- Met-Met-Gln-Arg-Asp-His-His-Gln-His-Met-Arg-Arg (SEQ  
ID NO: 21)
- Met-Lys-Thr-His-His-Gly-Asn-Asn-Ala-Val-Phe-Leu (SEQ  
20 ID NO: 22)
- Leu-Glu-Pro-Leu-Pro-His-Thr-Pro-Arg-Met-Tyr-Ala (SEQ  
ID NO: 23)
- Gln-Leu-Tyr-Glu-Pro-Asp-Ser-Gly-Pro-Trp-Ala-Pro (SEQ  
ID NO: 24)
- 25 Trp-Met-Thr-Lys-Met-Pro-Thr-Thr-His-Thr-Arg-Tyr (SEQ  
ID NO: 25)
- His-His-Pro-Met-Tyr-Ser-Met-Thr-Arg-Ala-Leu-Pro (SEQ

ID NO: 26)

Gly-Ser-Ala-His-Ser-Arg-Asn-Asp-Ala-Ala-Pro-Val (SEQ  
ID NO: 27)

His-Ser-Pro-Leu-Met-Gln-Tyr-His-Met-Ser-Gly-Thr (SEQ

5 ID NO: 28)

Thr-Ala-His-Met-Thr-Met-Pro-Ser-Arg-Phe-Leu-Pro (SEQ  
ID NO: 29)

Ala-Cys-Pro-Pro-Thr-Gln-Ser-Arg-Tyr-Cys (SEQ ID NO:  
30)

10 Ala-Cys-Asn-Gly-Met-Leu-Ala-Phe-Gln-Cys (SEQ ID NO:  
31)

Ala-Cys-Thr-Pro-Lys-Pro-Gly-Lys-His-Cys (SEQ ID NO:  
32)

13. An expression vector, which has an ability  
15 to express an organic substance - binding domain  
fused product comprised of an organic substance  
containing a protein in at least part thereof and a  
binding domain having an ability to bind to aluminum  
oxide in a host cell,

20 the binding domain containing a peptide  
comprised of at least one or more amino acids,

the peptide containing any one of at least one  
amino acid sequence selected from the group  
consisting of amino acid sequences of SEQ ID NOS: 1  
25 to 32, an altered amino acid sequence obtained such  
that the amino acid sequence is subjected to a  
deletion, substitution, or addition of one or more

amino acids, and a complex amino acid sequence containing two or more of the amino acid sequences, and a repetitive sequence of the amino acid sequences.

Val-Tyr-Ala-Asn-Gln-Thr-Pro-Pro-Ser-Lys-Ala-Arg (SEQ

5 ID NO: 1)

Gln-Ser-Ser-Ile-Thr-Thr-Arg-Asn-Pro-Phe-Met-Thr (SEQ  
ID NO: 2)

Phe-Met-Asn-His-His-Pro-Asn-Ser-Gln-Gln-Tyr-His (SEQ  
ID NO: 3)

10 Gln-Tyr-Thr-Ser-Ser-Gly-Ile-Ile-Thr-Ser-Ser-Ala (SEQ  
ID NO: 4)

His-His-His-Pro-Glu-Asn-Leu-Asp-Ser-Thr-Phe-Gln (SEQ  
ID NO: 5)

Gln-Pro-His-Met-His-Arg-Ser-Ser-His-Gln-Asp-Gly (SEQ

15 ID NO: 6)

Asn-Thr-Thr-Met-Gly-Pro-Met-Ser-Pro-His-Ser-Gln (SEQ  
ID NO: 7)

Ala-Ala-His-Phe-Glu-Pro-Gln-Thr-Met-Pro-Met-Ile (SEQ  
ID NO: 8)

20 Asp-His-Gln-Leu-His-Arg-Pro-Pro-His-Met-Met-Arg (SEQ  
ID NO: 9)

Val-Ser-Arg-His-Gln-Ser-Trp-His-Pro-His-Asp-Leu (SEQ  
ID NO: 10)

Met-Met-Gln-Arg-Asp-His-His-Gln-His-Asn-Ala-Gln (SEQ

25 ID NO: 11)

Val-Thr-Leu-His-Thr-Val-Asp-His-Ala-Pro-Gln-Asp (SEQ  
ID NO: 12)

- Ser-Val-Ser-Val-Gly-Met-Lys-Pro-Ser-Pro-Arg-Pro (SEQ  
ID NO: 13)
- His-Leu-Gln-Ser-Met-Lys-Pro-Arg-Thr-His-Val-Leu (SEQ  
ID NO: 14)
- 5 Ile-Pro-Asn-Ala-Glu-Thr-Leu-Arg-Gln-Pro-Ala-Arg (SEQ  
ID NO: 15)
- Val-Gly-Val-Ile-Ser-Ser-Trp-His-Pro-His-Asp-Leu (SEQ  
ID NO: 16)
- Thr-Val-Pro-Ile-Tyr-Asn-Thr-Gly-Ile-Leu-Pro-Thr (SEQ  
10 ID NO: 17)
- Tyr-Thr-Met-His-His-Gly-Ser-Thr-Phe-Met-Arg-Arg (SEQ  
ID NO: 18)
- Ser-Met-Met-His-Val-Asn-Ile-Arg-Leu-Gly-Ile-Leu (SEQ  
ID NO: 19)
- 15 Ala-Pro-Met-His-His-Met-Lys-Ser-Leu-Tyr-Arg-Ala (SEQ  
ID NO: 20)
- Met-Met-Gln-Arg-Asp-His-His-Gln-His-Met-Arg-Arg (SEQ  
ID NO: 21)
- Met-Lys-Thr-His-His-Gly-Asn-Asn-Ala-Val-Phe-Leu (SEQ  
20 ID NO: 22)
- Leu-Glu-Pro-Leu-Pro-His-Thr-Pro-Arg-Met-Tyr-Ala (SEQ  
ID NO: 23)
- Gln-Leu-Tyr-Glu-Pro-Asp-Ser-Gly-Pro-Trp-Ala-Pro (SEQ  
ID NO: 24)
- 25 Trp-Met-Thr-Lys-Met-Pro-Thr-Thr-His-Thr-Arg-Tyr (SEQ  
ID NO: 25)
- His-His-Pro-Met-Tyr-Ser-Met-Thr-Arg-Ala-Leu-Pro (SEQ

- ID NO: 26)  
Gly-Ser-Ala-His-Ser-Arg-Asn-Asp-Ala-Ala-Pro-Val (SEQ  
ID NO: 27)  
His-Ser-Pro-Leu-Met-Gln-Tyr-His-Met-Ser-Gly-Thr (SEQ  
5 ID NO: 28)  
Thr-Ala-His-Met-Thr-Met-Pro-Ser-Arg-Phe-Leu-Pro (SEQ  
ID NO: 29)  
Ala-Cys-Pro-Pro-Thr-Gln-Ser-Arg-Tyr-Cys (SEQ ID NO:  
30)  
10 Ala-Cys-Asn-Gly-Met-Leu-Ala-Phe-Gln-Cys (SEQ ID NO:  
31)  
Ala-Cys-Thr-Pro-Lys-Pro-Gly-Lys-His-Cys (SEQ ID NO:  
32)
14. An organic substance - binding domain fused  
15 product comprising an organic substance and a binding  
domain having an ability to bind to aluminum oxide,  
the binding domain containing a peptide  
comprised of at least one or more amino acids,  
the peptide containing any one of at least one  
20 amino acid sequence selected from the group  
consisting of amino acid sequences of SEQ ID NOS: 1  
to 32, an altered amino acid sequence obtained such  
that the amino acid sequence is subjected to a  
deletion, substitution, or addition of one or more  
25 amino acids, and a complex amino acid sequence  
containing two or more of the amino acid sequences,  
and a repetitive sequence of the amino acid sequences.

- Val-Tyr-Ala-Asn-Gln-Thr-Pro-Pro-Ser-Lys-Ala-Arg (SEQ  
ID NO: 1)
- Gln-Ser-Ser-Ile-Thr-Thr-Arg-Asn-Pro-Phe-Met-Thr (SEQ  
ID NO: 2)
- 5 Phe-Met-Asn-His-His-Pro-Asn-Ser-Gln-Gln-Tyr-His (SEQ  
ID NO: 3)
- Gln-Tyr-Thr-Ser-Ser-Gly-Ile-Ile-Thr-Ser-Ser-Ala (SEQ  
ID NO: 4)
- His-His-His-Pro-Glu-Asn-Leu-Asp-Ser-Thr-Phe-Gln (SEQ  
10 ID NO: 5)
- Gln-Pro-His-Met-His-Arg-Ser-Ser-His-Gln-Asp-Gly (SEQ  
ID NO: 6)
- Asn-Thr-Thr-Met-Gly-Pro-Met-Ser-Pro-His-Ser-Gln (SEQ  
ID NO: 7)
- 15 Ala-Ala-His-Phe-Glu-Pro-Gln-Thr-Met-Pro-Met-Ile (SEQ  
ID NO: 8)
- Asp-His-Gln-Leu-His-Arg-Pro-Pro-His-Met-Met-Arg (SEQ  
ID NO: 9)
- Val-Ser-Arg-His-Gln-Ser-Trp-His-Pro-His-Asp-Leu (SEQ  
20 ID NO: 10)
- Met-Met-Gln-Arg-Asp-His-His-Gln-His-Asn-Ala-Gln (SEQ  
ID NO: 11)
- Val-Thr-Leu-His-Thr-Val-Asp-His-Ala-Pro-Gln-Asp (SEQ  
ID NO: 12)
- 25 Ser-Val-Ser-Val-Gly-Met-Lys-Pro-Ser-Pro-Arg-Pro (SEQ  
ID NO: 13)
- His-Leu-Gln-Ser-Met-Lys-Pro-Arg-Thr-His-Val-Leu (SEQ



- ID NO: 14)  
Ile-Pro-Asn-Ala-Glu-Thr-Leu-Arg-Gln-Pro-Ala-Arg (SEQ  
ID NO: 15)  
Val-Gly-Val-Ile-Ser-Ser-Trp-His-Pro-His-Asp-Leu (SEQ  
5 ID NO: 16)  
Thr-Val-Pro-Ile-Tyr-Asn-Thr-Gly-Ile-Leu-Pro-Thr (SEQ  
ID NO: 17)  
Tyr-Thr-Met-His-His-Gly-Ser-Thr-Phe-Met-Arg-Arg (SEQ  
ID NO: 18)  
10 Ser-Met-Met-His-Val-Asn-Ile-Arg-Leu-Gly-Ile-Leu (SEQ  
ID NO: 19)  
Ala-Pro-Met-His-His-Met-Lys-Ser-Leu-Tyr-Arg-Ala (SEQ  
ID NO: 20)  
Met-Met-Gln-Arg-Asp-His-His-Gln-His-Met-Arg-Arg (SEQ  
15 ID NO: 21)  
Met-Lys-Thr-His-His-Gly-Asn-Asn-Ala-Val-Phe-Leu (SEQ  
ID NO: 22)  
Leu-Glu-Pro-Leu-Pro-His-Thr-Pro-Arg-Met-Tyr-Ala (SEQ  
ID NO: 23)  
20 Gln-Leu-Tyr-Glu-Pro-Asp-Ser-Gly-Pro-Trp-Ala-Pro (SEQ  
ID NO: 24)  
Trp-Met-Thr-Lys-Met-Pro-Thr-Thr-His-Thr-Arg-Tyr (SEQ  
ID NO: 25)  
His-His-Pro-Met-Tyr-Ser-Met-Thr-Arg-Ala-Leu-Pro (SEQ  
25 ID NO: 26)  
Gly-Ser-Ala-His-Ser-Arg-Asn-Asp-Ala-Ala-Pro-Val (SEQ  
ID NO: 27)

His-Ser-Pro-Leu-Met-Gln-Tyr-His-Met-Ser-Gly-Thr (SEQ  
ID NO: 28)

Thr-Ala-His-Met-Thr-Met-Pro-Ser-Arg-Phe-Leu-Pro (SEQ  
ID NO: 29)

5 Ala-Cys-Pro-Pro-Thr-Gln-Ser-Arg-Tyr-Cys (SEQ ID NO:  
30)

Ala-Cys-Asn-Gly-Met-Leu-Ala-Phe-Gln-Cys (SEQ ID NO:  
31)

Ala-Cys-Thr-Pro-Lys-Pro-Gly-Lys-His-Cys (SEQ ID NO:  
10 32)